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## Lontra longicaudis. By Serge Larivière

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### ***Lontra longicaudis (Olfers, 1818)***

#### Neotropical Otter

- Lutra longicaudis* Olfers, 1818:233. Type locality "Brazil."  
*Lutra enudris* Cuvier, 1823:242. Type locality "Rio Maroni, French Guiana."  
*Lutra insularis* Cuvier, 1823:243. Type locality "Trinidad."  
*Lutra platensis* Waterhouse, 1838:60. Type locality "Maldonado, Uruguay."  
*Lutra solitaria* Wagner, 1842:358. Type locality "Ypanema, São Paulo."  
*Lutra latifrons* Nehring, 1887:23. Type locality "South America, east of the Andes."  
*Lutra annectens* Major, 1897:142. Type locality "San Juan, a unos 24 km al oeste de Huigra," [Rio de Tepic, Nayarit, Mexico].  
*Lutra colombiana* Allen, 1904:452. Type locality "Bonda, Santa Marta district, [Magdalena, Colombia]."  
*Lutra latidens* Allen, 1908:660. Type locality "Larala [= Savala], Matagalpa, Nicaragua."  
*Lutra emerita* Thomas, 1908:390. Type locality "Rio Chama, altitude 2,000 m, Merida, Venezuela."  
*Lutra incarum* Thomas, 1908:392. Type locality "Marcapata, Cuzco, Peru."  
*Lutra mitis* Thomas, 1908:393. Type locality "Suriname."  
*Lutra parilina* Thomas, 1914:59. Type locality "San Juan, 800', 15 miles W. Huigra, [western] Ecuador."  
*Lutra repanda* Goldman, 1914:3. Type locality "Cana, Santa Cruz de Canal, 2,000', upper Rio Tuyra, Darién, eastern Panama."  
*Lutra mesopetes* Cabrera, 1924:52. Type locality "Costa Rica."

**CONTEXT AND CONTENT.** Order Carnivora, Family Mustelidae, Subfamily Lutrinae. The genus *Lontra* includes four species: *L. canadensis*, *L. felina*, *L. longicaudis*, and *L. provocax* (Wozencraft, 1993). Davis (1978) grouped *longicaudis* with *canadensis*, based on general similarities, recent separation in geological time, and possibility of interbreeding. Pohle (1920), Cabrera (1957), and Harris (1968) considered *annectens*, *enudris*, and *platensis* distinct species, based on shape of the rhinarium. Recent analyses suggest that *L. annectens-enudris-platensis* are conspecific, although geographical variation within the group is inadequately known (van Zyll de Jong, 1972). Currently, the following three subspecies of *L. longicaudis* are recognized (van Zyll de Jong, 1972):

- L. l. annectens* Major, 1897:142. See above (*colombiana* Allen, *emerita* Thomas, *latidens* Allen, *mesopetes* Cabrera, *parilina* Thomas, and *repanda* Goldman are synonyms).  
*L. l. enudris* Cuvier, 1823:242. See above (*incarum* Thomas, *insularis* Cuvier, and *mitis* Thomas are synonyms).  
*L. l. longicaudis* Olfers, 1818:233. See above (*latifrons* Nehring, *platensis* Waterhouse, and *solitaria* Wagner are synonyms).

**DIAGNOSIS.** *Lontra longicaudis* (Fig. 1) is the only *Lontra* species with a rhinarium variable in shape: the hairless part is smallest in *L. l. enudris* and largest in *L. l. annectens* (Davis, 1978; Parera, 1996a). *L. longicaudis* can be differentiated from the southern river otter (*L. provocax*) by its partially furred rhinarium compared to the bare rhinarium of *L. provocax* (Davis, 1978). Giant otters (*Pteronura brasiliensis*) are much larger (>20 kg), possess dark ventral fur, a white-to-yellow throat patch and a fully-furred rhinarium (Davis, 1978; Eisenberg, 1989; Emmons, 1990). Marine otters (*L. felina*) are smaller (<5 kg), have a rhinarium with a straight dorsal border, and are not sympatric with *L. longicaudis* (Parera, 1996a).

**GENERAL CHARACTERS.** Fur of the neotropical otter is

dense and short. Dorsally, pelage is a lustrous grayish-brown, and is slightly lighter ventrally, especially in the throat area (Bertoniatti and Parera, 1994). Tip of the muzzle, upper lip, and mandible are silvery whitish to yellowish. Head is small and flat and muzzle is broad. Neck is thicker than the head; eyes are small; ears are short and rounded (Emmons, 1990). Tail is long and wide, thick at the base and tapering (Bertoniatti and Parera, 1994). Legs are short and stout, and toes on all feet are fully webbed (Emmons, 1990).

*Lontra longicaudis* is sexually dimorphic in size with males 20–25% larger than females (Parera, 1996a). Average measurements (mm) with parenthetical range from three adult neotropical otters (sex unknown) from Argentina and Uruguay (Redford and Eisenberg, 1992) are as follows: total length, 1,053 (890–1,200); length of head and body, 513 (360–660); length of tail, 540 (370–840); length of hind foot, 120 (94–144); length of ear, 19.3 (18–22). Body mass of adults ranges from 5 to 15 kg (Harris, 1968) and is generally less than 12 kg (Bertoniatti and Parera, 1994; Eisenberg, 1989).

Skull is long and flat (Fig. 2). Average measurements (mm) from *L. l. annectens* and *L. l. enudris* (sex unknown—Harris, 1968) are as follows (n, range): basal length, 96.4 (4, 92.6–101.0) and 103.4 (3, 94.5–111.3); zygomatic breadth, 68.1 (7, 64.0–76.5) and 74.5 (3, 68.0–85.0); mastoid breadth, 66.3 (6, 61.0–75.0) and 73.4 (65.0–78.8); postorbital breadth, 17.9 (6, 15.0–23.5) and 18.5 (1); intertemporal breadth, 21.8 (7, 19.0–25.0) and 25.7 (1). Average measurements (mm) with parenthetical range of six males and six females *L. l. longicaudis*, respectively, are as follows: basal length, 107.2 (104.7–111.5) and 93.4 (89.1–97.5); zygomatic breadth, 80.2 (75.6–84.3) and 66.7 (63.2–69.3); mastoid breadth, 77.0 (75.0–80.5) and 63.9 (n = 5, 60.0–67.2); postorbital breadth, 35.5 (32.5–38.3) and 29.2 (22.2–32.8); intertemporal breadth, 24.2 (22.8–26.0) and 20.6 (19.3–22.0—Harris, 1968). Additional skull measurements are in Harris (1968).

**DISTRIBUTION.** *Lontra longicaudis* has the widest distribution of all three South American *Lontra* species (Chehébar, 1990). It is the most common otter in Mexico (Gallo, 1991), and is present from northwestern Mexico south to Uruguay, Paraguay, and across the northern part of Argentina to Buenos Aires province (Fig. 3; Chehébar, 1990; Cockrum, 1964; Redford and Eisenberg, 1992). The neotropical otter is widespread in the northern and central parts of Argentina (Bertoniatti and Parera, 1994) and occurs in all national parks and provincial reserves (Chehébar, 1990). Detailed



FIG. 1. Adult *Lontra longicaudis*. Photograph provided by A. Parera, Fundación Vida Silvestre Argentina.

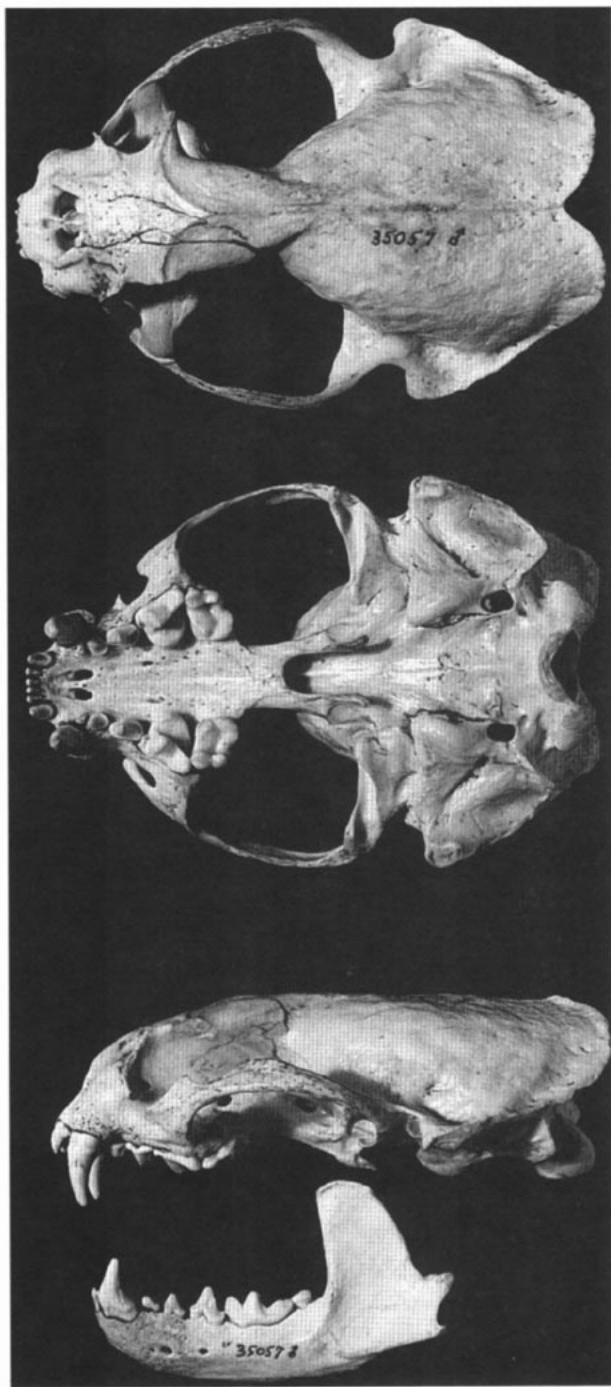


FIG. 2. Dorsal, ventral, and lateral views of cranium and lateral view of mandible of *Lontra longicaudis* (male, Royal Ontario Museum #35057). Greatest length of cranium is 126.7 mm.

country accounts of its distribution and abundance are provided by Chehébar (1990).

**FOSSIL RECORD.** Little is known about the fossil record of *L. longicaudis*. Lutrinæ first appears in North America during the Blancan (late Pliocene—Kurtén and Anderson, 1980; van Zyll de Jong, 1972). The first appearance of otters in South America is uncertain, but they probably occurred in the Ensenadan (middle Pleistocene—Savage and Russell, 1983). The genus *Lontra* is also present in the Lujanian (late Pleistocene), although fossil evidence for *L. longicaudis* is unavailable (Savage and Russell, 1983). Neotropical otters separated from marine otters (*L. felina*) ca. 1.7 million years ago (Koepfli and Wayne, 1998), roughly corresponding to the dispersal of otters into South America after formation of the Panamanian landbridge 2–3 million years ago (Marshall, 1985).

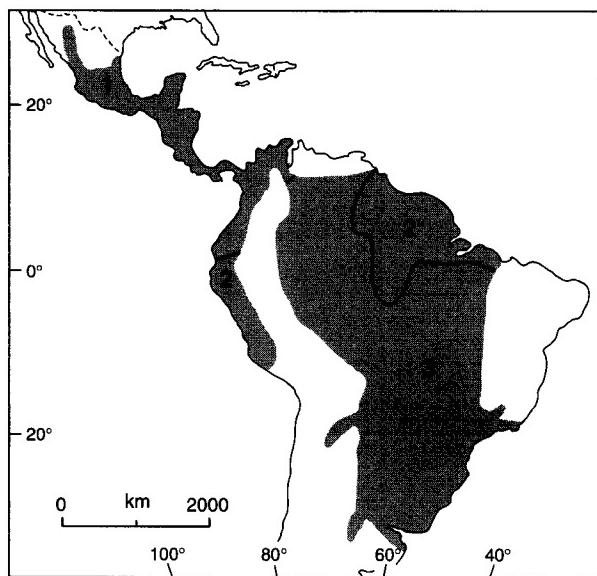


FIG. 3. Distribution of *Lontra longicaudis* in Central and South America, modified from Chehébar (1990), Eisenberg (1989), Emmons (1990), Foster-Turley (1990), Gallo (1996), Griva (1978), Melendres (1978), and Parera (1996a): 1, *L. l. annectens*; 2, *L. l. enudris*; 3, *L. l. longicaudis*.

**FORM AND FUNCTION.** *Lontra longicaudis* has four nipples, two on the lower, and two on the upper side of the abdomen (Harris, 1968). Males have a well-developed baculum characterized by a small ventral groove, deeper at the distal end and shallower proximally. Total length of baculum is 72 mm (Chaîne, 1925). Dental formula is i 3/3, c 1/1, p 4/3, m 1/2, total 36 (Parera, 1996a).

Neotropical otters may be immobilized with a combination of xylazine (1.3 mg/kg) and ketamine (8.5 mg/kg—Colares and Best, 1991). Immobilized neotropical otters have a mean ( $\pm SD$ ) respiratory rate of  $16 \pm 3$  breaths/min, a cardiac rate of  $96 \pm 5$  beats/min, and a rectal temperature of  $37 \pm 2^\circ\text{C}$  (Colares and Best, 1991). Clinical chemistry values (mean  $\pm SD$ , in mg/dl) for three neotropical otters from Brazil were: blood urea nitrogen,  $35.1 \pm 5.4$ ; cholesterol,  $242 \pm 32$ ; creatinine,  $1.1 \pm 0.3$ ; glucose,  $172 \pm 62$ ; and uric acid,  $2.0 \pm 0.7$  (Colares and Best, 1991). The following hematological values (mean  $\pm SD$ , in cells/ $\mu\text{l}$ ) were observed: eosinophils,  $765 \pm 321$ ; lymphocytes,  $1800 \pm 800$ ; monocytes,  $372 \pm 121$ ; neutrophils,  $4272 \pm 1583$ ; red blood cells,  $5.5 \times 10^6 \pm 0.6 \times 10^6$ ; white blood cells,  $7.3 \times 10^3 \pm 2.5 \times 10^3$  (Colares and Best, 1991).

**ONTOGENY AND REPRODUCTION.** Breeding occurs mostly in spring, but may occur throughout the year in certain localities (Parera, 1996a). Gestation is 56 days (Bertonatti and Parera, 1994). Litter size varies from one to five (Bertonatti and Parera, 1994), usually two or three (Parera, 1996a). Delayed implantation is facultative and duration of delay is unknown (Blacher, 1994; Cubas et al., 1993; Jacome and Parera, 1995).

Young are born blind but fully furred. Eyes open after 44 days (Jacome and Parera, 1995), and young start to venture outside of the natal den or nest when ca. 52 days old. Aquatic activity starts ca. 74 days after birth (Jacome and Parera, 1995). Before they are old enough to follow the female, young neotropical otters spend most of the day playing near the natal den (Parera, 1996a). Males do not provide parental care (Parera, 1996a). Mensual growth curves for one juvenile male and one juvenile female are available (Parera, 1996a).

**ECOLOGY.** *Lontra longicaudis* favors clear, fast-flowing rivers and streams, and may be rare or absent from sluggish, silt-laden lowland rivers. It occurs mostly from 300 to 1,500 m of altitude, but has been found up to 3,000 m (Eisenberg, 1989; Emmons, 1990; Melendres, 1978; Redford and Eisenberg, 1992) and in Costa Rica and Uruguay is common below 300 m. It occupies both deciduous and evergreen forests, in warm and cool climates (Emmons, 1990). Habitat requirements include ample riparian veg-

estation (Bertonatti and Parera, 1994; Redford and Eisenberg, 1992), and abundant potential den sites (Soldateli and Blacher, 1996). The neotropical otter is versatile, tolerates environmental modifications, and occupies areas close to human activity (Bertonatti and Parera, 1994; Macdonald and Mason, 1992). Density of neotropical otters varies from 0.81 to 2.76 otters per km of shoreline (Bertonatti and Parera, 1994; Parera, 1993, 1996b). Highest abundance of neotropical otters occur in areas with extensive aquatic networks, low chemical and organic pollution, and low human density (Bardier, 1992; Blacher, 1987).

*Lontra longicaudis* feeds mainly on fish, but crustaceans and molluscs are important in some areas (Bardier, 1992; Bertonatti and Parera, 1994; Gallo, 1986; Helder-José and Ker De Andrade, 1997; Passamani and Camargo, 1995; Soldateli and Blacher, 1996). Small mammals, birds, reptiles, and insects are consumed opportunistically (Bertonatti and Parera, 1994; Parera, 1993; Passamani and Camargo, 1995). Fish consumed are mostly from the families Cichlidae, Anostomidae, Characidae, and Pimelodidae (Passamani and Camargo, 1995; Spinola and Vaughan, 1995b). Fast-moving fish such as piranhas (*Serrasalmus*) are avoided (Parera, 1993; Spinola and Vaughan, 1995b).

*Lontra longicaudis* may compete with sympatric *Pteronura brasiliensis*. However, competition may be buffered by use of different habitat, denning sites, size of prey, and by the more crepuscular habits of *L. longicaudis* (Carter and Rosas, 1997; Duplaix, 1978).

Anacondas (*Eunectes*) and jaguars (*Panthera onca*) prey on neotropical otters (Duplaix, 1978; Parera, 1996a), but caimans (*Caiman*), dogs, and birds of prey may also kill neotropical otters (Dunstone and Strachan, 1988; Parera, 1996a). Humans kill adult otters through hunting or incidental to fishing operations (Dunstone and Strachan, 1988).

**BEHAVIOR.** *Lontra longicaudis* is most often solitary (Duplaix, 1978), but pairs may occur during breeding (Bertonatti and Parera, 1994). During the breeding season, a male remains with the female for a single day. Family groups, composed of a female with one or two young, are observed occasionally (Mondolfi, 1970; Parera, 1993).

Parturition may occur in nests of grass and leaves located on the banks of streams (Harris, 1968) or in hollow logs or trees, root cavities, or caves excavated by the female (Eisenberg, 1989). Dens rarely occur >150 m from the shore (Bertonatti and Parera, 1994; Parera, 1996b).

Neotropical otters communicate with neighbouring animals via scent marking. Feces are deposited in conspicuous sites. They may function for advertisement (Bertonatti and Parera, 1994) and for coordination of sexual activity (Parera, 1996a). For spraying (scent-marking with feces), neotropical otters prefer sites that are solid, high, dry, and in proximity to deep water; they may use logs, root systems, rocks, sand bars, and planks under bridges (Bardier, 1992; Dunstone and Strachan, 1988; Macdonald and Mason, 1992; Parera, 1993; Spinola and Vaughan, 1995a). On sand bars, sprays are deposited in a scrape excavated to depths of up to 20 cm (Dunstone and Strachan, 1988). Where such surfaces are not available, otters will spray on humid and frequently flooded surfaces (Parera, 1993). In temperate regions, spraying is more frequent in winter (Parera, 1993). Communication may also occur via a variety of whistles, hums, and screeches (Emmons, 1990; Parera, 1996a). In Argentina, neotropical otters frequently approached observers and uttered a loud "hahh" (Parera, 1993), which may serve as an alarm call (Harris, 1968).

Foraging occurs all day, but is more common in middle or late afternoon (Parera, 1993). Nocturnal activity is rare (Parera, 1993), but neotropical otters may become completely nocturnal with human disturbance (Bertonatti and Parera, 1994; Parera, 1996b).

Neotropical otters are always in or near the water, and are graceful swimmers and divers (Emmons, 1990). Foraging dives last from 20–30 s (Bertonatti and Parera, 1994; Blacher, 1987). Smaller prey items are consumed in the water, but large prey are taken ashore (Parera, 1993). On land, head and tail are carried low, and the back is humped high. Neotropical otters move with a humping gallop or waddling walk (Emmons, 1990).

**GENETICS.** *Lontra longicaudis* has  $2n = 38$  chromosomes. Both sex chromosomes are submetacentric (van Zyll de Jong, 1987). The fundamental number of autosomes is 68 (32 basal + 4 telo-

centric), and the karyotype is characterized by a low number of telocentric chromosomes (van Zyll de Jong, 1987). Hybridization between a male *L. canadensis* and a female *L. longicaudis* was successful, but fertility of offspring was not reported (Davis, 1978). The olfactory receptor gene of *L. longicaudis* has been used in comparative analyses (Issel-Tarver and Rine, 1997).

**CONSERVATION.** *Lontra longicaudis* is listed as endangered in the Appendix I of the Convention on the International Trade of Endangered Species of Wild Fauna and Flora (CITES; Emmons, 1990) and by the Mexican Ministry of Ecology (Ceballos and Navarro, 1991). It is also listed as endangered by the United States Department of Interior. The neotropical otter is listed as a priority species by the Fundación Vida Silvestre Argentina, which made efforts to expose illegal hunting and to gather more biological information on this species (Bertonatti and Parera, 1994). The subspecies *L. l. longicaudis* is listed as vulnerable by the International Union for the Conservation of Nature (Foster-Turley, 1990; Nowak, 1991).

The species is currently protected in Argentina, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad, Tobago, Uruguay, and Venezuela (Aranda, 1991; Brack-Egg, 1978; Chehébar, 1990; Mondolfi and Trebbau, 1978). Neotropical otters are not legally protected in Guyana and Honduras, and no information is available on the distribution or legal status of neotropical otters in Belize, El Salvador, French Guiana, and Guatemala (Chehébar, 1990). Conservation priorities for the neotropical otter should focus on field surveys of current populations, identification of key habitats, protection or areas where high populations remain, and stricter regulations to prevent release of toxic waste in riverine systems (Mason and Macdonald, 1990).

Heavy hunting of *L. longicaudis* for its fur in the period 1950–1970 resulted in local extinction over parts of its former range (Brack-Egg, 1978; Donadio, 1978). At least 113,718 pelts were exported from the Peruvian Amazon in 1959–1972 (Smith, 1981); in 1970 alone, over 14,000 pelts were exported from Peru and were assumed to represent only 50% of the animals killed (Melendres, 1978; Smith, 1981). The Brazilian trade was more modest, with only 3,710 pelts exported in 1950–1965 (Smith, 1981). Around 1990, the retail price of one neotropical otter pelt was U.S. \$25–90 (Aranda, 1991).

Although current hunting and population status are unknown (Emmons, 1990), continued illegal hunting (Chehébar, 1991), habitat destruction through mining and ranching, and water pollution are likely responsible for the rareness of *L. longicaudis* (Alho and Lacher, 1991; Alho et al., 1988; Chehébar, 1990; Gallo, 1986; Melendres, 1978). In the Ibera lagoon, Argentina, otter populations were low in the 1970s due to excessive hunting. However, after receiving full protection in 1983, they recovered rapidly (Bertonatti and Parera, 1994; Parera, 1993). Neotropical otters show little fear of humans (Parera, 1993). Occupation of remote habitats makes census and surveys difficult, and current information is insufficient to evaluate its present status (Bertonatti and Parera, 1994).

Captive breeding protocols and guidelines for construction of suitable housing facilities and handling otters are available (Griva, 1978); however, *L. longicaudis* rarely reproduces successfully in captivity (Bertonatti and Parera, 1994). Neotropical otters are sometimes kept in captivity by fishermen who use trained otters for capturing fish (Parera, 1996a).

**REMARKS.** The taxonomy of the genus has been debated, but recent treatments support the use of the name *Lontra* rather than *Lutra* for New World river otters (Larivière and Walton, 1998; Wozencraft, 1993). Vernacular names other than neotropical river otter include Amazonian river otter, water dog, and *loutre néotropicale* (French). Other names include *lobito del río*, *lobito*, *lobopé*, *lobo de río Chico*, *nutria verdadera*, *lobito común*, *guairao*, *lontra*, *cachorro-d'agua*, *nútria*, *perro de agua*, *gato de agua*, *watradagoe* (Bertonatti and Parera, 1994; Emmons, 1990; Parera, 1996a).

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